

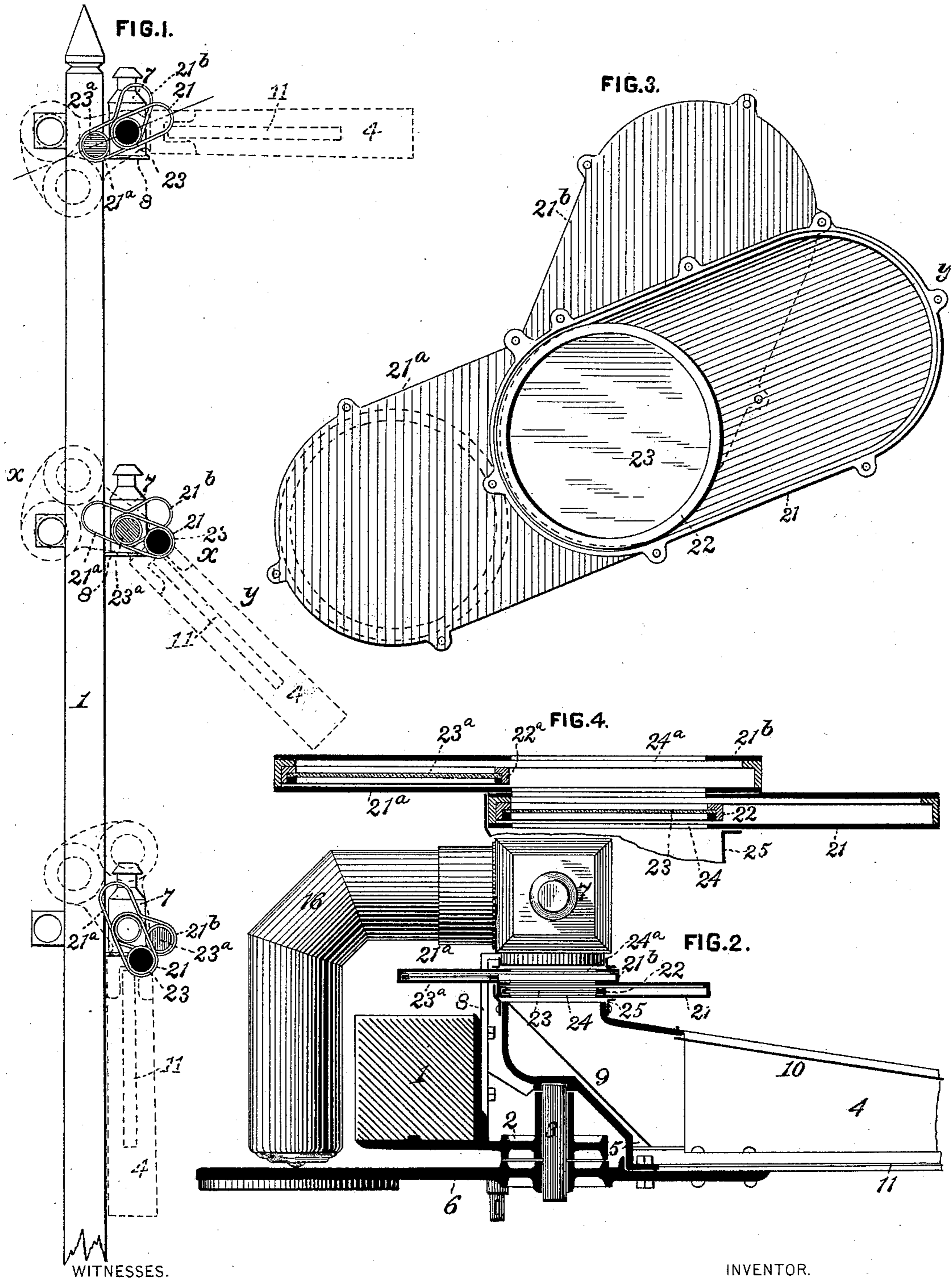
(No Model.)

J. G. SCHREUDER.

SEMAPHORE SIGNAL.

No. 405,682.

Patented June 18, 1889.



WITNESSES.

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UNITED STATES PATENT OFFICE.

JENS G. SCHREUDER, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO GEORGE WESTINGHOUSE, JR., OF SAME PLACE.

SEMAPHORE-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 405,682, dated June 18, 1889.

Application filed December 13, 1888. Serial No. 293,464. (No model.)

To all whom it may concern:

Be it known that I, JENS G. SCHREUDER, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented or discovered certain new and useful Improvements in Semaphore-Signals, of which improvements the following is a specification.

In Letters Patent No. 346,387, dated July 27, 1886, No. 372,569, dated November 1, 1887, and No. 387,452, dated August 7, 1888, is described a construction of semaphore wherein provision is made for illuminating the blade of the semaphore in order that the condition of the switches may be indicated by colored signal-lights, as is customary, but also by the position of the semaphore-blade. In position-signals, not only of the construction set forth in the Letters Patent above referred to, but also of other forms or constructions, a white light is shown by the blade regardless of the position of said blade.

The object of the invention herein is to provide for a change of color in the light corresponding to the change of position of the semaphore-blade. As, for example, when the semaphore is at normal or "danger," the bar of light shown by the blade shall be red or other color indicating "danger;" but when the semaphore is shifted to "caution" or "safety" the color of such bar of light shall be changed to green or white, or such other colors as are employed to indicate "caution" or "safety."

In the accompanying drawings, forming a part of this specification, Figure 1 is a view in elevation of a signal-post carrying three semaphores, and designed to illustrate diagrammatically the operation of my invention. Fig. 2 is a horizontal section on the line $x x$, Fig. 1. Fig. 3 is a view in side elevation of the case or frame carrying the colored glasses, and Fig. 4 is a sectional view on the line $y y$, Fig. 3.

In the practice of my invention I prefer to construct and arrange the several parts forming the signal in the manner described and shown in the Letters Patent hereinbefore referred to, and I will therefore refer only generally to construction and operation of such parts.

On the post 1 is secured a casting 2, carry-

ing the pivot-pin 3, on which the blade is mounted, said blade consisting of a box-like structure 4, the casting 5 forming the hub of the blade and the frame or spectacles 6. The lamp 7 is supported by a horizontal bracket 8, secured to the post 1, the lamp being so located that a part of the rays of light therefrom will enter the box-like blade 4, and impinging upon the reflectors 9 and 10 will be reflected out through the windows 11 in the front side of the blade. Provision is also made by means of the angular tube 16 and reflector (not shown) to direct a part of the rays of light from the lamp 7 through colored glasses in the frame or spectacles 6, in order to display a colored light corresponding to the position of the blade, as fully described in Letters Patent No. 387,452.

In signals constructed as described the condition of the switches is indicated by a bar of white light emitted from the blade parallel or at an angle to the horizon in accordance with the position of the blade, and also by a white or colored light in accordance with the position of the spectacle-frame. As the light emitted from the blade is considerably larger than that shown through the spectacles, it will be more readily seen and at a greater distance, and hence if the color of such bar of light be changed in correspondence with a change of its position with relation to the horizon a change of position of the signal will be more observable.

In order to effect a change of color in the bar of light, I provide for the interposition of colored glasses in the path of the rays of light at a suitable point between the lamp and the window 11. In applying my invention for this purpose to a two-position signal I provide a flattened tube or case 21, in which is arranged an annular frame or ring 22, carrying a disk 23 of red glass or of any other color employed to indicate "danger." The disk 23 is made of a diameter at least equal to the opening in the lantern 7, through which light passes into the casting 5, and the tube or case 21 is made of a length at least equal to twice the diameter of disk 23, so as to permit of said disk rolling or sliding out of line with lateral openings 24 formed in both sides of the tube or case, at one end thereof. The tube or case

21 is secured to the casting 5 by means of a collar 25, with the axes of the openings 24 therein in line with the opening in the lantern and casting 5, and is arranged at such an angle to the blade 4 that when said blade is in a horizontal position the tube will be so inclined as to cause the disk 23 to roll down into line with the openings 24, as indicated in the upper blade in Fig. 1, and into the path of the rays of light as they pass into the casting, thereby coloring such rays as desired; but when the blade is shifted to "safety" the inclination of the tube will be so changed as to cause the disk to roll to the opposite end of the tube, thereby permitting the rays of light to pass unchanged from the lantern into the blade, as shown in the lower blade in Fig. 1.

For three-position signals I employ a flattened tube or case composed of two sections 21^a and 21^b, arranged at an angle to each other, as shown in Fig. 3. In each side of the angular tube thus formed and at the point of junction of the sections are formed openings 24^a, and the angular tube or case is connected to the tube or case 21 or to the casting 5, so that the axes of its openings 24^a will be in line with the axes of the openings 24 of the tube or case 21, the section 21^a being parallel with the tube 21 and the section 21^b forming an angle therewith equal or approximately equal to the angle formed by the semaphore-blade with the horizon when at "caution," as will be hereinafter more fully set forth.

In that class of signals known as "three-position" signals the blade is placed in a horizontal position to indicate "danger," at an angle of forty-five degrees to the horizon to indicate "caution," and in a vertical position to indicate "safety."

In order to effect a change in the color of the bar of light from the blade corresponding to the changes in position above referred to, the combined tubes or cases above described are so connected to the casting 5 that the tube 21 will form a small angle with the blade, thereby insuring such an inclination of the tube when the blade is horizontal as to cause the red-glass disk in said tube to roll down into line with the openings 24, thereby causing a red light to be shown by the blade. As the section 21^a is parallel with the tube 21, the green-glass disk 23^a contained therein will remain at the outer or left-hand end of said section while the blade is in a horizontal position, as indicated in the upper blade in Fig. 1. When the blade is shifted to "caution," as indicated in the middle blade in Fig. 1, the inclination of the tube 21 and section 21^a is so changed that the disk 23 will roll to the opposite end of its tube, and the green disk 23^a will roll into line with the openings 24^a, thereby changing the color of the bar of light from the blade to green. As the section 21^b is, as

above stated, arranged at an angle to the tube 21, equal to or a little greater than the amount of angular movement of the blade in moving from "danger" to "caution," such movement will not so change the inclination of the section 21^b as to permit of the disk 23^a moving beyond the openings 24^a, located at the point of junction of the sections 21^a and 21^b. If the blade be now shifted to a "safety" or vertical position, as indicated by the lower blade in Fig. 1, the green disk 23^a will roll to the outer or right hand end of the section 21^b, the inclination of said section being changed sufficiently to cause such movement, thereby permitting the light of the lantern to pass unchanged into the blade. A reversal of the movements of the blade will produce a reversal of the above-described movements of the disks 23 and 23^a, thereby causing a corresponding change in the light emitted from the blade—that is to say, the bar of light is changed from white to green and from green to red.

The principal characteristic of the invention described herein is the interposition, by means of suitable mechanism, of disks of colored glass or other translucent material in the path of the rays of light from a lantern employed for illuminating a semaphore-blade between such lantern and the point or points of emission of such rays of light from the blade, and hence I do not wish to limit myself herein to the specific construction either of the semaphore itself or the means employed for moving the colored disks, as hereinbefore set forth.

I claim herein as my invention—

1. In a semaphore-signal, the combination of a swinging blade, a lamp for illuminating said blade, and a disk formed of translucent material movable into and out of the path of the rays of light from the lamp in accordance with the changes of position of said blade, substantially as set forth.

2. In a semaphore-signal, the combination of a swinging blade, a lamp for illuminating said blade, a tube or case moving with the blade and arranged at an angle thereto, and a disk of translucent material mounted in the tube or case, substantially as set forth.

3. In a semaphore-signal, the combination of a swinging blade, a lamp for illuminating said blade, a straight tube or case arranged at an angle to the blade, an angular tube or case arranged in proper relation to the blade, and colored disks of translucent material mounted in said tubes, substantially as set forth.

In testimony whereof I have hereunto set my hand.

JENS G. SCHREUDER.

Witnesses:

DARWIN S. WOLCOTT,
R. H. WHITTLESEY.